Preface

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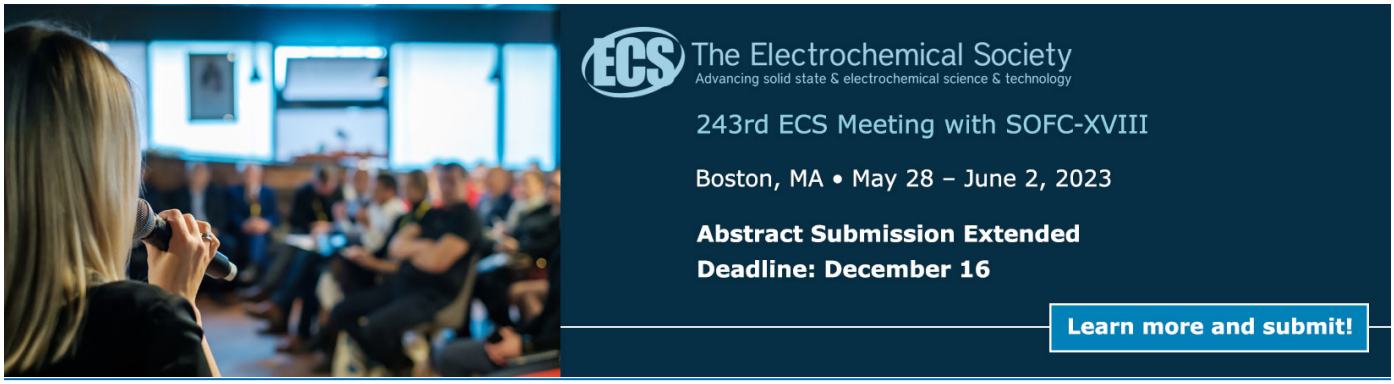

PREFACE

Agriculture Faculty of Sriwijaya University has organized **Sriwijaya Conference on Sustainable Environment, Agriculture and Farming System (SAC-SAFSE)** on September 29th, 2021 in Palembang, Indonesia. The objective of SAC-SAFSE presented the latest state of the arts related to Sustainable Environment, Agriculture and Farming System.

As we all might have also seen in the last decade that there has been a quickening of the pace of research and scholarship among both social and natural scientists, as well as among policymakers and activists. To this end, with the support of by Agriculture Faculty, Universitas Sriwijaya, Indonesia and co-organized by Kasetsart University, Thailand; SEARCA Southeast Asia; and Murray State University, USA, organize Sriwijaya Conference on Sustainable Environment, Agriculture and Farming System. The SAC-SAFSE was held to bring together social and natural scientists, and environmental activists to discuss results from ongoing research projects, to find ways to enhance the exchange of knowledge among disciplines, and to establish global partnership both in research and business. We also would like to underline that the SAC-SAFSE would be an annual agenda of Agriculture Faculty, Universitas Sriwijaya.

Sriwijaya Conference on Sustainable Environment, Agriculture and Farming System (SAC-SAFSE) 2021 was implemented virtually, this is because the cov-19 pandemic is still spreading. The conference was perform using zoom. The **Sriwijaya Conference on Sustainable Environment, Agriculture and Farming System (SAC-SAFSE)** event is virtually implemented using Zoom breakout room with a model that all invited speakers and presenters are given time to present their material for 10 minutes followed by question and answer session, through chat forums and Q&A forums provided by the Zoom application and also direct questioning system. Overall, the conference took 10 hours, initially from registration into closing ceremony. The participation of the keynote speakers, invited speakers, and participants were originally from inside and outside countries such as Malaysian, Thailand, Philippines, Vietnam, Sri Lanka, Japan, US, and various regions in Indonesia

Sriwijaya Conference on Sustainable Environment, Agriculture and Farming System (SAC-SAFSE) 2021 was supported by stable internet network system and a zoom application. It met several technical obstacles encountered by the participants, such as difficulty to present their PPT and video. The virtual conference has weakness due to less interaction between participants.

The **Sriwijaya Conference on Sustainable Environment, Agriculture and Farming System (SAC-SAFSE)** 2021 committee received 94 manuscripts and a total of 91 papers were presented and discussed. The papers were authored by researchers Indonesia, Malaysian, Thailand, Philippines, Vietnam, Sri Lanka, Japan, US. All papers have been reviewed to be given critical comments and improvements by a panel of reviewers as purpose enhancing quality of the papers. There were 69 papers were selected and eligible to be published in the proceeding as results of review process.

We sincerely express our gratitude to the international/national advisory committee, presenters, participants, contributors of **Sriwijaya Conference on Sustainable Environment, Agriculture and Farming System (SAC-SAFSE) 2021**. High appreciation to the whole committee team for their excellence in managed and organized all parts of this conference even though should face some obstacles due to pandemic condition. The hard works by the Organizing Committee are also highly appreciated. We also express our sincere gratitude to all sponsors, i.e. BNI and BKS Barat. Last but not the least, we are thankful to IOP EES Conference Series for producing the proceeding.

Palembang, 29th September 2021

Dean of Agriculture Faculty Universitas Sriwijaya

Dr. Ir. A.Muslim, M.Agr

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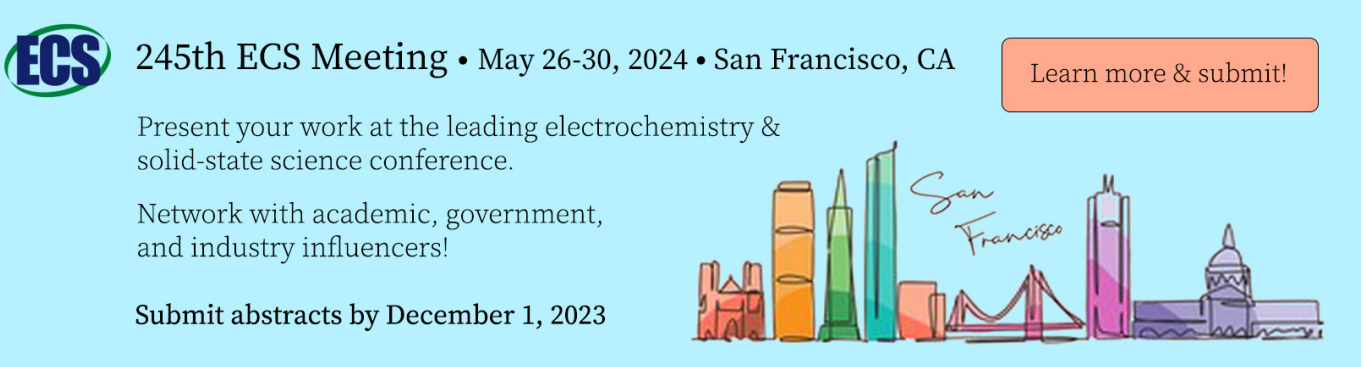
Morphological Characterization of Two Glutinous Rice Landraces from Garut



Morphological Characterization of Two Glutinous Rice Landraces from Garut

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Abstract. Garut regency has two varieties of local glutinous rice from Sukaresmi sub-district, namely Sigadog and Pecut varieties. Both varieties compared to their morphological characteristics. The results of the study showed both varieties have their own advantages. Varieties of Sigadog can be harvested at 140 days after planting, productive tiller average 36 tillers, average plant height 110 cm, average yield potential of 4.9 tons per ha, weight of 100 grains 28.6 g, resistant to lodging, suitable to be planted in the rainy season and dry season. Varieties of Pecut can be harvested at 125 days after planting, productive tiller average 36 tillers, average plant height 110 cm, average yield potential of 5.9 tons per ha, weight of 100 grains 28.5 g, vulnerable to lodging, suitable to be planted in the dry season only.

1. Introduction

Garut is one of the cities located in west Java province at coordinates 6º56'49" - 7 45'00"S and 107º25'8" - 108º7'30" E. The administrative area of Garut is 307.407 ha (3,074.07 km²). Garut has an altitude that varies from the lowest area parallel to sea level to the highest area at the top of the mountain. The topographic characteristics of Garut Regency in the north consist of highlands and mountains, while the southern part of most of the surface has a steep level of steepness and is parallel to sea level. The area of Garut Regency has a slope that varies between 0-40%, of which 71.42% or 218,924 ha is at a slope level between 8-25%. The area of sloping areas with a slope below 3% reaches 29,033 ha or 9.47%; an area with a slope of up to 8% covers an area of 79,214 ha or 25.84%; The area with a slope of up to 15% reaches 62,975 ha or 20.55% of the area with a slope of up to 40% reaches an area of 7,550 ha or about 2.46%[1].

Farmers choose the type of glutinous rice with the criteria of glutinous rice having good quality. Good quality is characterized by good taste according to the preferences of farmers and consumers, as well as resistance to pests and diseases [2]. Each variety of glutinous rice has different morphological characters. The length, width, thickness, and shape of the rice grains were reported to be used as distinguishing characters between rice varieties. Differences in the character of rice can be used to determine whether there is a suspicion of mixing rice for forensic purposes [3]. Therefore, it is

necessary to characterize glutinous rice in order to obtain quality glutinous rice data and be liked by consumers.

The character of the grain and the high marketing value of rice landraces make local varieties attractive for cultivation. The marketing value of rice depends on the characteristics of the grain [4]. Each local glutinous rice cultivar has different characteristics that are unique. The morphological characters of grain can be used by farmers to determine the type of rice to be planted and to determine the purity of rice seeds[5]. Research on local rice is very important for the preservation of germplasm.

Sukaresmi District, Garut Regency has glutinous rice landrace which is often cultivated by local farmers, namely Sigadog and Pecut. However, the morphological characterization of the two glutinous rice landraces has never been carried out. Morphological characters that can be used to distinguish rice landraces cultivars are stem, leaf, flower, and grain [6]. This study aimed to compare the morphological characters of two glutinous rice landeraces; Sigadog and Pecut.

2. Materials and Methods

The glutinous rice used is Sigadog and Pecut, Local Glutinous Rice from Sukaresmi District, Garut Regency. Observations were made in two growing seasons in 2019.

The observed morphological characters were divided into qualitative and quantitative characters. Qualitative characters consist of 16 characters, including: plant age, plant shape, color of leg, color of leaf ear, color of leaf, surface shape of leaf, position of leaf, position of flag leaf, color of stem, lodging, grain loss, grain shape, grain color, texture rice, resistance to pests, and resistance to disease. Quantitative characters consist of five characters, namely: plant height, number of productive tillers, average yield, yield potential, and weight of 1000 grains.

Sampling is done by using snowball sampling technique [7], and direct visits to farmers to conduct interviews about the types and names of glutinous rice planted. In addition, interviews were also used to determine the characteristics of plants grown in the area.

Data obtained from observations of plant morphological characters, grain, and rice were tabulated using Microsoft Excel (Microsoft Office 365).

3. Results and Discussion

3.1. Qualitative Morphological Character

The description of the qualitative morphological characteristics of Sigadog and Pecut glutinous rice is presented in Table 1. The comparison of qualitative characters presented in Table 1 shows that each variety has advantages and disadvantages. Sigadog plant has age 15 days longer than Pecut. The advantages of Pecut are that it has an oval grain shape, fluffier rice texture, and is resistant to pests and diseases. Sigadog is suitable for planting in two seasons. The advantage of Sigadog is that it is resistant to lodging, this is what causes Sigadog to be planted all year round. Pecut are only suitable for planting in the dry season because they are prone to lodging.

Table 1. Qualitative characters of sigadog and pecut.

No.	Qualitative Character	Sigadog	Pecut
1	Plant Age	140 days	125 days
2	Plant Shape	Upright wide	Upright
3	Leg Color	whitish green	whitish green
4	Leaf Ear Color	Creamy green	Green
5	Leaf Color	Green	Light green
6	Leaf Surface Shape	Wide	Wide
7	Leaf Position	Upright	Upright
8	Flag Leaf Position	Upright	Upright
9	Stem Color	Green	Light green
10	Lodging	Resistant	Susceptible
11	Grain Loss	Resistant	Resistant
12	Grain shape	Slightly round	Oval hairy ends
13	Grain color	Dark chocolate	Black

14	Rice texture	Not fluffier	Fluffy
15	Pest resistance	Resistant	Resistant
16	Disease resistance	Vulnerable to Bacterial Leaf Blight (BLB)	Resistant

Farmers choose rice varieties to pay attention to several characters, including high yields, short lifespan, resistance to pests and diseases and resistance to fall [8] Tall plants easily fall so that they can reduce grain yields, increase respiration, reduce nutrient translocation and are susceptible to pests and diseases [9]. Sigadog resistance to lodging but rice is less fluffy and susceptible and susceptible to disease. Pecut are not resistant to lodging, but the texture of the rice is fluffier, and the soil is resistant to disease. These two glutinous rice landraces can be used for crosses to produce the glutinous rice that farmers and consumers want.

3.2. Quantitative Morphological Characters

The description of quantitative morphological characteristics of Sigadog and Pecut glutinous rice is presented in Table 2. Quantitative morphological characters include plant height, number of productive tillers, average yield, yield potential, and weight of 1000 grains.

Table 2. Sigadog and whip quantitative characters.

No.	Quantitative Character	Sigadog	Pecut
1	plant height	110cm	120cm
2	number of productive tillers	36 tillers	36 tillers
3	average yield	7 ton/ha	8.4 ton/ha
4	potential yield of dry milled grain	4.9 ton/ha	5.9 ton/ha
5	1000 grain weight	28.6 g	28.5 g

The comparison of qualitative characters presented in Table 2 shows that Pecut is superior to Sigadog in terms of yield potential. However, Pecut can only be planted once a year, during the dry season. The weight of 1000 grains of Pecut grain are 0.1 g different from Sigadog, even though the yield potential is higher. The size of the grain will affect the quality of the rice produced. Long grain can produce more broken rice, while round grain can produce more head of rice than long grain[10]. Each cultivar has a different percentage of grain content [11]. The shape of the grain is a feature that is easy to observe and is familiar to almost everyone.

4. Conclution

Sigadog has advantages that can complement disadvanages of Pecut. Sigadog is resistant to lodging but has a long age, the texture of the rice is less fluffier, and not resistant to disease. Pecut has the texture of fluffier rice, high yield potential, short life, but not resistant to lodging. Sigadog can be planted all year round, but Pecut can only be planted in the dry season.

5. Acknowledgments

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